

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Eugene P. Marsh)	Group Art Unit: Unknown
)	
Serial No.: Unassigned)	Examiner: Unknown
(Parent: 09/146,866))	
)	
Filed: Herewith)	
(Parent: 3 September 1998))	

For: DIFFUSION BARRIER LAYERS AND METHODS OF FORMING SAME

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
ATTN: BOX PATENT APPLICATION
Washington, D.C. 20231

Dear Sir:

The present application is a divisional patent application of Serial No. 09/146,866 filed on 3 September 1998.

Prior to taking up the above-identified application for examination, please amend the application as follows:

In the Specification

Please replace the paragraph beginning at page 10, line 13, with the following rewritten paragraph. Per 37 C.F.R. §1.21, this paragraph is also shown in Appendix A with notations to indicate the changes made.

Any ruthenium-containing precursor and platinum-containing precursor may be used in accordance with the present invention. Preferably, the platinum containing precursors include MeCpPtMe_3 (where Cp=cyclopentadienyl), platinum hexafluoroacetylacetonate, CpPtMe_3 , $\text{Pt}(\text{acetylacetonate})_2$, $\text{Pt}(\text{PF}_3)_4$, $\text{Pt}(\text{CO})_2\text{Cl}_2$, $\text{cis-PtMe}_2[\text{MeNC}]_2$, $(\text{COD})\text{Pt}(\text{CH}_3)_2$, $(\text{COD})\text{Pt}(\text{CH}_3)\text{Cl}$, $(\text{C}_5\text{H}_5)\text{Pt}(\text{CH}_3)(\text{CO})$, $(\text{acac})(\text{Pt})(\text{CH}_3)_3$, where COD = 1,5 cyclooctadiene and acac = acetylacetonate. Further, preferably, the ruthenium precursors are liquid ruthenium

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complexes of the following formula (Formula I): (diene)Ru(CO)₃ wherein: "diene" refers to linear, branched, or cyclic dienes, bicyclic dienes, tricyclic dienes, fluorinated derivatives thereof, combinations thereof, and derivatives thereof additionally containing heteroatoms such as halide, Si, S, Se, P, As, or N. These precursor complexes and others are described in Assignees' copending patent application entitled "Precursor Chemistries for Chemical Vapor Deposition of Ruthenium and Ruthenium Oxide" having U.S. Serial No. 09/141,236, filed August 27, 1998 and in Assignees' copending patent application entitled "Methods for Preparing Ruthenium and Osmium Compounds" having U.S. Serial No. 09/141,431, filed August 27, 1998. Further, for example, additional precursors are generally discussed in U.S. Patent No. 5,372,849 to McCormick et al. More preferably, the ruthenium precursors used according to the present invention include one of C₆H₈Ru(CO)₃, bis(cyclopentadienyl) ruthenium (II), triruthenium dodecacarbonyl, and cyclopentadienyl dicarbonyl ruthenium (II) dimer.

Please replace the paragraph beginning at page 11, line 6, with the following rewritten paragraph. Per 37 C.F.R. §1.21, this paragraph is also shown in Appendix A with notations to indicate the changes made.

Methods of forming the co-deposited platinum:ruthenium alloy layer 14 are described in co-pending patent application entitled "Method for Producing Low Carbon/Oxygen Conductive Layers" having U.S. Serial No. 09/146,297, filed September 3, 1998. One skilled in the art will recognize that these methods and various other methods may be used to form the platinum:ruthenium alloy layer 14 according to the present invention.

In the Claims

Please cancel claims 1-22 as requested in the Request for Filing A Divisional Patent Application Under Rule §1.53(b), filed concurrently herewith.

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Remarks

Please enter the above amendment to the specification and consider the pending claims 23-39.

Conclusion

The Examiner is invited to contact Applicant's Representatives at the below-listed telephone number, if there are any questions regarding this Preliminary Amendment or if prosecution of this application may be assisted thereby.

Respectfully submitted,

Micron Technology, Inc.

By its Representatives,
Mueiting, Raasch & Gebhardt, P.A.
P.O. Box 581415
Minneapolis, MN 55458-1415
Phone: (612)305-1220
Facsimile: (612)305-1228
Customer Number 26813

By: 

Mark J. Gebhardt
Reg. No. 35,518
Direct Dial (612)305-1216

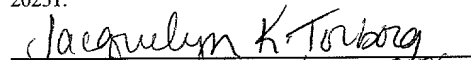
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Date

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Date of Deposit 29 August 2001

I hereby certify that this paper and/or fee is/are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Attn: Box Patent Application, Washington, D. C. 20231.


Name JACQUELYN K. TORBORG

**APPENDIX A - SPECIFICATION AMENDMENTS
INCLUDING NOTATIONS TO INDICATE CHANGES MADE**

**Serial No.: Unassigned
Docket No.: 150.0064 0102**

Amendments to the following are indicated by underlining what has been added and bracketing what has been deleted.

In the Specification

The paragraph beginning at page 10, line 13, has been amended as follows:

Any ruthenium-containing precursor and platinum-containing precursor may be used in accordance with the present invention. Preferably, the platinum containing precursors include MeCpPtMe_3 (where Cp=cyclopentadienyl), platinum hexafluoroacetylacetonate, CpPtMe_3 , $\text{Pt}(\text{acetylacetonate})_2$, $\text{Pt}(\text{PF}_3)_4$, $\text{Pt}(\text{CO})_2\text{Cl}_2$, cis- $\text{PtMe}_2[\text{MeNC}]_2$, $(\text{COD})\text{Pt}(\text{CH}_3)_2$, $(\text{COD})\text{Pt}(\text{CH}_3)\text{Cl}$, $(\text{C}_5\text{H}_5)\text{Pt}(\text{CH}_3)(\text{CO})$, $(\text{acac})(\text{Pt})(\text{CH}_3)_3$, where COD = 1,5 cyclooctadiene and acac = acetylacetonate. Further, preferably, the ruthenium precursors are liquid ruthenium complexes of the following formula (Formula I): $(\text{diene})\text{Ru}(\text{CO})_3$ wherein: "diene" refers to linear, branched, or cyclic dienes, bicyclic dienes, tricyclic dienes, fluorinated derivatives thereof, combinations thereof, and derivatives thereof additionally containing heteroatoms such as halide, Si, S, Se, P, As, or N. These precursor complexes and others are described in Assignees' copending patent application entitled "Precursor Chemistries for Chemical Vapor Deposition of Ruthenium and Ruthenium Oxide" having U.S. [Serial No. _____ (Micron Docket No. 97-0675)] Serial No. 09/141,236, filed August 27, 1998 and in Assignees' copending patent application entitled "Methods for Preparing Ruthenium and Osmium Compounds" having U.S. [Serial No. _____ (Micron Docket No. 97-0861)] Serial No. 09/141,431, filed August 27, 1998. Further, for example, additional precursors are generally discussed in U.S. Patent No. 5,372,849 to McCormick et al. More preferably, the ruthenium precursors used according to the present invention include one of $\text{C}_6\text{H}_8\text{Ru}(\text{CO})_3$, bis(cyclopentadienyl) ruthenium (II), triruthenium dodecacarbonyl, and cyclopentadienyl dicarbonyl ruthenium (II) dimer.

The paragraph beginning at page 11, line 6, has been amended as follows:

Methods of forming the co-deposited platinum:ruthenium alloy layer 14 are described in co-pending patent application entitled "Method for Producing Low Carbon/Oxygen Conductive

150.0064 0102

Amendment and Response - Appendix A

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Serial No.: Unknown (Parent Serial No.: 09/146,866)

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For: DIFFUSION BARRIER LAYERS AND METHODS OF FORMING SAME

Layers" [(Docket No. 150.00730101 (Micron Docket No. 97-0996)] having U.S. Serial No. 09/146,297, filed September 3, 1998. One skilled in the art will recognize that these methods and various other methods may be used to form the platinum:ruthenium alloy layer 14 according to the present invention.

09/146,297 - 08/24/98